REMARKS

Summary

This Amendment is responsive to the Office Action mailed on November 19, 2002. Claims 25 and 29 are amended. Claims 25-33 are pending.

The Examiner has indicated that claim 30 contains allowable subject matter.

Claims 25 and 29 stand rejected as being anticipated by Pidgeon (US 5,850,305).

Claim 32 stands rejected under 35 U.S.C. § 102(e) as being anticipated by an article by Ju, et al. entitled "Method for Eliminating Narrowband Shortwave Interference in Upstream Channel of HFC", Electronic Letters, April 30, 1998, Vol. 34, No. 9, Pages 852-854 (Hereinafter "Ju").

Claims 26, 27, 28, and 31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Pidgeon and the Background of the Invention.

Claim 33 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ju.

Applicants respectfully traverse these rejections in view of the amended claims and the comments which follow.

Discussion of Pidgeon

Pidgeon discloses adaptive predistortion control circuitry for use in a communication system. An optical source 101 generates an optical carrier 105 which is intensity modulated by an electo-optical modulator 103 in

accordance with a radio frequency signal 107. The modulator 103 modulates the optical carrier 105 in response to both the input RF signal and a predistortion signal provided by a predistorter 102 (Col. 4, 1, lines 3-14). The predistorter 102 is provided to compensate for the non-linearities of the modulator 103. The predistorter 102 recieves an RF input representing a television or other signal to be transmitted. In response to the RF input signal the predisorter 102 provides a signal to the modulator 103 including both the RF input and a DC bias. In response, the waveguides vary the amplitude of the optical carrier signal provided by the optical source 101 (Col. 5, lines 3-15). An adaptive predistorion control circuit 104 provides feedback control to the predistorter 102.

Pidgeon attempts to actually cancel out the unwanted distortion products by creating equal but opposite distortion products at the transmitter. In Pidgeon, first and second error correction signals are produced which eliminate second and third order distortion at the transmitter (Col. 6, lines 37-63). In Pidgeon, the exact nature of the distortion must be known at the transmitter in order to create the exact opposite distortion.

In Applicants' invention, the distortion is not cancelled at the transmitter as is the case with Pidgeon. Rather, the present invention attenuates the transmitted signal at the receiver using a filter. An accentuated signal (e.g., the signal shown in Applicants' Figure 7 having accentuated peak 85) is transmitted to the receiver, where

the distortion (e.g., shown in Applicants' Figure 6 as signal 82 with interference peak 83) is filtered (e.g., to produce the signal shown in Applicants' Figure 8) (see, e.g., Applicant's specification, page 22, lines 8-16). Contrary to Pidgeon, with the claimed invention, the exact nature of the distortion does not need to be known, only the frequency of the distortion needs to be known.

With the present invention, the receiver attenuates the unwanted distortion product of the accentuated transmitted signal at the receiver. In order to counter the effect of the attenuation of distortion prone frequencies at the receiver, the present invention includes an inverse filter at the transmitter to accentuate the distortion prone portions of the transmitted signal by the same amount as the attenuation of the filter in the receiver. In Applicants' claimed invention, the accentuation of the signal at the transmitter cancels the effect of the filter at the receiver. The filter at the transmitter does not cancel the distortion itself.

Therefore, Pidgeon actually teaches away from Applicants' claimed invention, as Pidgeon suppresses the signal which is input to the transmitter to achieve a distortion free transmitted signal. In contrast, Applicants' claimed invention accentuates the distortion prone frequencies of the transmitted signal, and then filters the effects of distortion at such frequencies at the receiver.

Pidgeon simply does not disclose or suggest accentuating a signal at the transmitter and transmitting

the accentuated signal to a receiver where the distortion is filtered, as set forth in Applicants' amended claims. The predistortion control (i.e. suppression/cancellation of second and third order distortion) provided by Pidgeon takes place solely at the transmitter (Col. 3, lines 57-61).

Further, each of Applicants' independent claims requires the signal being communicated to be filtered at the transmitter to accentuate the signal magnitude of the transmitted signal at a predetermined fixed frequency where nonlinear distortion is expected to occur, without substantially affecting the signal magnitude at frequencies where said nonlinear distortion is not expected to occur. Pidgeon makes no disclosure or mention of figuring out frequencies where nonlinear distortion is expected to occur. Nor does Pidgeon make any attempt to accentuate a transmitted signal magnitude at such frequencies at the transmitter, and to attenuate the signal magnitude at such frequencies at a receiver.

Applicants respectfully submit that such a scheme, as they claim, would be counterintuitive. Prior to the present invention, one skilled in the art would have thought to attenuate signals at frequencies where distortion would be expected to occur; not to accentuate signals at such frequencies.

Accordingly, it is respectfully submitted that the present claims clearly distinguish over the Pidgeon, taken alone or in combination Ju or any of the other prior art of record.

Further remarks regarding the asserted relationship between Applicants' claims and the prior art are not deemed necessary, in view of the amended claim and the foregoing discussion. Applicants' silence as to any of the Examiner's comments is not indicative of an acquiescence to the stated grounds of rejection.

Withdrawal of the rejections under 35 U.S.C. § 102(e) and 35 U.S.C. § 103(a) is therefore respectfully requested.

Conclusion

In view of the foregoing, the Examiner is respectfully requested to reconsider this application, allow each of the presently pending claims, and to pass the application on to an early issue. If there are any remaining issues that need to be addressed in order to place this application into condition for allowance, the Examiner is requested to telephone Applicants' undersigned attorney.

Respectfully submitted,

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VERSION OF AMENDED CLAIM WITH MARKINGS TO SHOW CHANGES MADE

25. (Amended) A method for filtering nonlinear distortion in a signal communicated from a transmitter to a receiver via a communication path, comprising the steps of:

filtering said signal at the transmitter to accentuate the signal magnitude of the transmitted signal at a predetermined fixed frequency where said nonlinear distortion is expected to occur, without substantially affecting the signal magnitude of the transmitted signal at frequencies where said nonlinear distortion is not expected to occur;

communicating the [filtered] accentuated signal to said receiver; and

re-filtering the [filtered] accentuated signal at said receiver to attenuate the signal magnitude at said fixed frequency.

29. (Amended) Apparatus for filtering nonlinear distortion in a signal communicated from a transmitter to a receiver via a communication path, comprising:

a first filter at the transmitter to provide a [filtered] transmitted signal having an accentuated magnitude at a fixed frequency where said nonlinear distortion is expected to occur, said filter not substantially affecting the signal magnitude of the transmitted signal at frequencies where said nonlinear distortion is not expected to occur; and

a second filter at the receiver adapted to re-filter the [filtered] accentuated signal to attenuate the signal magnitude at said fixed frequency.